REMARKS

Applicant appreciates the Examiner's thorough consideration provided the present application. Claims 1-12 are now present in the application. Claims 9 and 10 have been withdrawn. Claims 1, 2, 11 and 12 have been amended. Claims 1, 2, 11 and 12 are independent. Reconsideration of this application, as amended, is respectfully requested.

Interview With The Examiner

A telephone interview was conducted with the Examiner in charge of the above-identified application on March 22, 2011. Applicant greatly appreciates the courtesy shown by the Examiner during the interview.

During the interview with the Examiner, Applicant's representative presented arguments and proposed amendments with regard to the rejection under 35 U.S.C. §§ 112 and 103. The Examiner indicated that if claims 1, 2, 11 and 12 are amended as proposed during the interview, it will overcome the current rejections under 35 U.S.C. §§ 112 and 103; however, further search and consideration will be necessary.

In this Reply, claims 1, 2, 11 and 12 have been amended as proposed during the interview for the Examiner's consideration.

Claim Rejections Under 35 U.S.C. §112

Claims 11 and 12 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. This rejection is respectfully traversed.

In view of the foregoing amendments, it is respectfully submitted that this rejection has been addressed. Accordingly, all pending claims are now definite and clear. Reconsideration and withdrawal of the rejection under 35 U.S.C. § 112, second paragraph, are therefore respectfully requested.

Claim Rejections Under 35 U.S.C. § 103

Claims 1, 2, 11 and 12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Haworth, U.S. Patent No. Re. 36,125. Claims 1-5, 11 and 12 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Bovin, U.S. Patent Application Publication No. 2002/0079260, in view of Haworth. Claims 6 and 7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Bovin in view of Haworth, and further in view of Misao, JP 62204804. Claim 8 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Bovin in view of Haworth, and further in view of Walker, U.S. Patent No. 5,282,966. These rejections are respectfully traversed.

Complete discussions of the Examiner's rejections are set forth in the Office Action, and are not being repeated here.

In light of the foregoing amendments, Applicant respectfully submits that this rejection has been obviated and/or rendered moot. While not conceding to the Examiner's rejection, but merely to expedite prosecution, as the Examiner will note, independent claims 1, 2, 11 and 12 have been amended.

Independent claim 1 and 2 now recite a combination of elements including "a partial portion of a circumference of the hollow fiber membrane bundle is within the neighboring region (A), and the rest of the circumference of the hollow fiber membrane bundle is within the non-

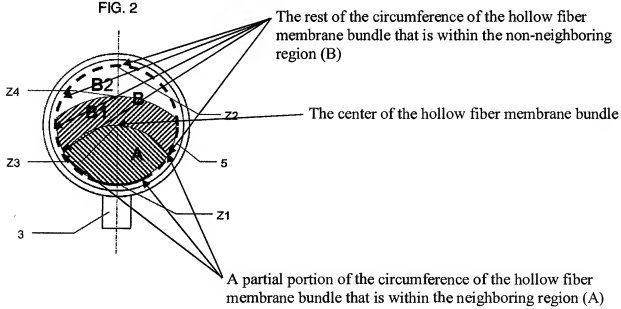
neighboring region (B), the membrane-occupying rate at the partial portion of the circumference of the hollow fiber membrane bundle is higher than the membrane-occupying rate at the rest of the circumference of the hollow fiber membrane bundle, and the membrane-occupying rate at the rest of the circumference of the hollow fiber membrane bundle is not higher than the membrane-occupying rate at the center of the hollow fiber membrane bundle."

Independent claim 11 now recites a combination of elements including "a partial portion of a circumference of a hollow fiber membrane bundle is within the first region, and the rest of the circumference of the hollow fiber membrane bundle is within the second region, the membrane-occupying rate at the partial portion of the circumference of the hollow fiber membrane bundle is higher than the membrane-occupying rate at the rest of the circumference of the hollow fiber membrane bundle, and the membrane-occupying rate at the rest of the circumference of the hollow fiber membrane bundle is not higher than the membrane-occupying rate at the center of the hollow fiber membrane bundle."

Independent claim 12 now recites a combination of elements including "a partial portion of a circumference of the rod-shaped bundle of hollow fiber membranes is within the neighboring region (A), and the rest of the circumference of the rod-shaped bundle of hollow fiber membranes is within the non-neighboring region (B), the membrane-occupying rate at the partial portion of the circumference of the rod-shaped bundle of hollow fiber membranes is higher than the membrane-occupying rate at the rest of the circumference of the rod-shaped bundle of hollow fiber membranes, and the membrane-occupying rate at the rest of the circumference of the rod-shaped bundle of hollow fiber membranes is not higher than the membrane-occupying rate at the center of the rod-shaped bundle of hollow fiber membranes."

Support for the amendments to claims 1, 2, 11 and 12 can be found at least in FIG. 2 and the corresponding description of the specification as originally filed.

FIG. 2



In particular, as embodied in FIG. 2 (reproduced above with annotation) of the present application, the membrane-occupying rate at the partial portion of the circumference of the hollow fiber membrane bundle (i.e., PA) is higher than the membrane-occupying rate at the rest of the circumference of the hollow fiber membrane bundle (i.e., PB (PB1 or PB2)), and the membrane-occupying rate at the rest of the circumference of the hollow fiber membrane bundle (i.e., PB (PB1 or PB2)) is not higher than the membrane-occupying rate at the center of the hollow fiber membrane bundle (i.e., at the boundary of PA and PB1).

Applicant respectfully submits that the combinations of elements set forth in claims 1, 2, 11 and 12 are not disclosed or suggested by the references relied on by the Examiner.

Haworth

In particular, Haworth in col. 3, lines 12-27 discloses:

> Alternatively, the inner average packing fraction may be similarly defined along a radius beginning at said region of the hollow fiber bundle adjacent to the core and extending along said radius twenty-five percent outward toward the region of the hollow fiber bundle adjacent to the housing. The outer average packing fraction may be similarly defined along said radius beginning at said region of the hollow fiber bundle adjacent to the housing and extending along said radius twenty-five percent inward toward the region of the hollow fiber bundle adjacent to the core. Under these definitions, the inner average packing fraction may be **less than** the outer average packing fraction. Specifically, the inner average packing fraction may be within the range of sixty to ninety-five percent of the outer average packing fraction. (Emphasis added.)

In other words, Haworth simply discloses that the inner average packing fraction may be less than the outer average packing fraction, which means that the average packing fraction at the circumference of the hollow fiber bundle will be higher than the packing fraction at the center of the hollow fiber bundle. Unlike Haworth, in the present invention, the membrane-occupying rate at some portion (i.e., at the rest of the circumference of the hollow fiber membrane bundle within the non-neighboring region (B)) is not higher than the membrane-occupying rate at the center of the hollow fiber membrane bundle. Therefore, Haworth fails to teach "the membrane-occupying rate at the rest of the circumference of the hollow fiber membrane bundle is not higher than the membrane-occupying rate at the center of the hollow fiber membrane bundle" as recited in claims 1 and 2, "the membrane-occupying rate at the rest of the circumference of the hollow fiber membrane bundle is not higher than the membrane-occupying rate at the center of the hollow fiber membrane bundle" as recited in claim 11, and "the membrane-occupying rate at the rest of the circumference of the rod-shaped bundle of hollow fiber membranes is not higher than the membrane-occupying rate at the center of the rod-shaped bundle of hollow fiber membranes" as recited in claim 12.

In addition, Haworth simply discloses that the inner average packing fraction may be less than the outer average packing fraction without suggesting that the packing fraction at different portions of the circumference is different. Therefore, Haworth also fails to teach "the membrane-occupying rate at the partial portion of the circumference of the hollow fiber membrane bundle is higher than the membrane-occupying rate at the rest of the circumference of the hollow fiber membrane bundle" as recited in claims 1 and 2, "the membrane-occupying rate at the partial portion of the circumference of the hollow fiber membrane bundle is higher than the membrane-occupying rate at the rest of the circumference of the hollow fiber membrane bundle" as recited in claim 11, and "the membrane-occupying rate at the partial portion of the circumference of the rod-shaped bundle of hollow fiber membranes is higher than the membrane-occupying rate at the rest of the circumference of the rod-shaped bundle of hollow fiber membranes" as recited in claim 12.

Bovin

Bovin in paragraph [0080] discloses:

> The displacement of the two carriages 30 that guide the fibres 40 towards the troughs 23 with a constant circumferential speed and a variable amplitude influences the structure of the bundle of hollow fibres. The density of the fibres disposed in the trough is inversely proportional to the amplitude of the displacement of the carriages 30: the smaller the displacement amplitude, the higher the density of the fibres placed in the troughs 23. The fibre-guiding step contributes towards heterogeneous distribution of the hollow fibres with a higher fibre density in certain parts of the bundle. In this case, **the bundles of hollow fibres**, after they have satisfied the conditions regarding the time variation of the amplitude of the reciprocating motion of the guide carriages 30 indicated in FIG. 4, **have a higher density at the periphery compared with the density at the centre (see FIG. 5).** Further, each bundle comprises two longitudinal **peripheral** and opposed zones where the densities in hollow fibres are at their **highest**: these two zones correspond to the start and finish of filling of the troughs 23. (Emphasis added).

In other words, Bovin in paragraph [0080] and FIG. 5 clearly shows that the bundles of hollow fibers have a higher density at the periphery compared with the density at the center. Unlike Bovin, in the present invention, the membrane-occupying rate at some portion (i.e., at the rest of the circumference of the hollow fiber membrane bundle within the non-neighboring region (B)) is not higher than the membrane-occupying rate at the center of the hollow fiber membrane bundle. Therefore, Bovin fails to teach "the membrane-occupying rate at the rest of the circumference of the hollow fiber membrane bundle is not higher than the membrane-occupying rate at the center of the hollow fiber membrane bundle" as recited in claims 1 and 2, "the membrane-occupying rate at the rest of the circumference of the hollow fiber membrane bundle is not higher than the membrane-occupying rate at the center of the hollow fiber membrane bundle" as recited in claim 11, and "the membrane-occupying rate at the rest of the circumference of the rod-shaped bundle of hollow fiber membranes is not higher than the membrane-occupying rate at the center of the rod-shaped bundle of hollow fiber membranes" as recited in claim 12.

In addition, Bovin discloses that the hollow fiber bundle has its highest densities at the outer periphery without suggesting that the density at different portions of the outer periphery is different. Therefore, Bovin also fails to teach "the membrane-occupying rate at the partial portion of the circumference of the hollow fiber membrane bundle is higher than the membrane-occupying rate at the rest of the circumference of the hollow fiber membrane bundle" as recited in claims 1 and 2, "the membrane-occupying rate at the partial portion of the circumference of the hollow fiber membrane bundle is higher than the membrane-occupying rate at the rest of the circumference of the hollow fiber membrane bundle" as recited in claim 11, and "the membrane-occupying rate at the partial portion of the circumference of the rod-shaped bundle of hollow

fiber membranes is higher than the membrane-occupying rate at the rest of the circumference of the rod-shaped bundle of hollow fiber membranes" as recited in claim 12.

With regard to the Examiner's reliance on the secondary references, these references have only been relied on for their teachings against some dependent claims. These references also fail to disclose the above combinations of elements as set forth in amended independent claims 1, 2, 11 and 12. Accordingly, these references fail to cure the deficiencies of Haworth and Bovin.

Accordingly, none of the utilized references individually or in combination teach or suggest the limitations of amended independent claims 1, 2, 11 and 12. Therefore, Applicant respectfully submits that amended independent claims 1, 2, 11 and 12 clearly define over the teachings of the utilized references.

In addition, claims 3-8 depend, either directly or indirectly, from independent claims 1 and 2, and are therefore allowable based on their respective dependence from independent claims 1 and 2, which are believed to be allowable.

In view of the above remarks, Applicant respectfully submits that claims 1-8, 11 and 12 clearly define the present invention over the references relied on by the Examiner. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103 are respectfully requested.

CONCLUSION

All the stated grounds of rejection have been properly traversed and/or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider all presently pending rejections and that they be withdrawn.

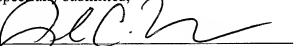
It is believed that a full and complete response has been made to the Office Action, and that as such, the Examiner is respectfully requested to send the application to Issue.

In the event there are any matters remaining in this application, the Examiner is invited to contact Cheng-Kang (Greg) Hsu, Registration No. 61,007 at (703) 205-8000 in the Washington, D.C. area.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

Dated: April 7, 2011

Respectfully submitted,

By 

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